TAREK KHALIFA, PHD

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AREAS OF RESEARCH INTEREST

- Smart Power Grid Communication and Networking
- Sensor Networks
- Intelligent Transportation Systems
- Communication Networks

EDUCATION

May 2013 **PhD degree**,

University of Waterloo, Electrical and Computer Engineering

Waterloo, Ontario, Canada

- Thesis: "Design and Analysis of a Novel Split and Aggregated Transmission Control Protocol for Smart Metering Infrastructure"
- The objective was to enhance the performance of communication protocols in a smart power grid.
- Research involved mathematical modeling using Markov chains, queuing systems, and optimization techniques, and involved network simulations using ns-2 and C++.

Oct 2007 **Master's degree**

University of Waterloo, Electrical and Computer Engineering

Waterloo, Ontario, Canada

- Thesis: "Secure Aggregation Protocol with Byzantine Robustness for Wireless Sensor Networks"
- The objective was to secure communication in a wireless sensor network while minimizing energy cost.
- Research involved developing an information theoretic metric to assess the trustworthiness of a give sensor, and involved simulations using Matlab.

Dec 2000 **Bachelor of Science**,

Tripoli University, Electrical and Computer Engineering

Tripoli, Libya

- Graduation project: "*EPROM Programmer and Emulator Full Kit*" design and implementation, involving HW and C++ code.

- Top student in my graduation year

TEACHING EXPERIENCE

2006 -2013 **Teaching Assistant**

Electrical and Computer Engineering, University of Waterloo, Waterloo, Ontario
Key Tasks:
- Delivered tutorials to, and marked exams and assignments for, undergraduate students in a variety of courses:
    1. Algorithms and Data Structures, ECE250 (W2011, F2011, W2013)
    2. Computer Networks, ECE358 (S2012)
    3. Computer Networks and Security, ECE428 (S2008)
    4. Real-time Operating Systems, ECE354 (F2006, W2009)
    5. Circuits, MTE120 (S2011)
    6. Introduction to Computer Structures & Real-Time Systems, MTE241 (F2008, F2009)
    7. Operating Systems, SE350 (W2010)
    8. Linear Algebra with Numerical Applications, NE112 (F2010)

WORK EXPERIENCE

2002 – 2004 **IT System Engineer**

Schlumberger Overseas, Middle East region (Libya and Dubai)
Key Tasks:
- Designed, installed and provided maintenance for the company's large network, including connecting remote sites via VSAT links over VPN, and installing VOIP.
- Designed and installed active directory infrastructure for different sites.
- Proposed, designed, and deployed backup solution for hundreds of employees' machines and server machines for company's different offices in several countries.
- Proposed, designed, and deployed Antivirus centralized solution.
- Prepared and delivered training material to three levels of employees: first-level support, on-site support, and users.
- Developed web based inventory software using Microsoft Access and Visual Basic.
- Provided help desk support (on-site and remote) to hundreds of users in different countries.
- Contributed as a team member to many projects such as mail servers, software distribution solution, and video conference facility.
- Interviewed and hired new employees.

1999 –2001 **Network Engineer**

Libya Telecom and Technology, Tripoli, Libya
Key Tasks:

- Designed and installed customer equipment cache server under Linux operating system.
- Installed DSL and wireless leased lines to customers.
- Provided customer support.
- Provided maintenance and expansion of company's network

AWARDS

- Two-year scholarship award (2005-2007) from Tripoli University to pursue the M.Sc. degree in Canada in recognition of being top student of year 2000.
- Three-year scholarship award (2008-2011) from the Ministry of Higher Education of Libya to pursue the Ph.D. degree.
- Three times the University of Waterloo Graduate-Scholarship award (2007, 2009, 2011)
- One-year University of Waterloo Graduate Research Studentship (2012-2013)

SERVICE ACTIVITIES

- Coordinator for Graduate Research Seminars (2008-2010)
- Tutoring Arabic as a second language (2012)

PUBLICATIONS

1. T Khalifa, A Abdrabou, K Naik, M Alsabaan, "Transport Layer Performance Analysis and Optimization for Smart Metering Infrastructure", submitted to IEEE Systems Journal
2. T Khalifa, A Abdrabou, K Naik, M Alsabaan, A Nayak and N Goel, "Split-and Aggregated-transport control protocol (SA-TCP) for Smart Metering Infrastructure", IEEE Transactions on Smart Grid, July2013.
3. T Khalifa, A Abdrabou, K Naik, M Alsabaan, A Nayak and N Goel, "Design and analysis of Split-and Aggregated-transport control protocol (SA-TCP) for Smart Metering Infrastructure", IEEE Third International conference on Smart Grid Communications (SmartGridComm), 2012.
4. M Alsabaan, K Naik, T Khalifa, A Nayak, "Optimization of fuel cost and emissions with vehicular networks at traffic intersections", IEEE Intelligent Transportation Systems (ITSC), 2012.
5. T Khalifa, K Naik and A Nayak, "A survey of communication protocols for automatic meter reading applications", IEEE Communications Surveys & Tutorials, IEEE 13 (2), 168-182, 2011.
6. T Khalifa, K Naik, M Alsabaan and A Nayak, "A transport control protocol suite for smart metering infrastructure", Electronic Devices, Systems and Applications (ICEDSA), 2011.
7. M Alsabaan, K Naik, T Abdelkader, T Khalifa and A Nayak, "Geocast routing in vehicular networks for reduction of CO_2 emissions", Information and Communication on Technology for the Fight against Global Warming, 2011.
8. M Alsabaan, K Naik, T Khalifa and A Nayak, "Vehicular networks for reduction of fuel consumption and CO_2 emission", IEEE International Conference on Industrial Informatics (INDIN), 2010.
9. T Khalifa, K Naik, M Alsabaan, A Nayak and N Goel, "Transport protocol for smart grid infrastructure", Ubiquitous and Future Networks (ICUFN), 2010.

10. M Alsabaan, K Naik, T Khalifa and A Nayak, "Applying Vehicular Networks for Reduced Vehicle Fuel Consumption and CO2 Emissions", Wireless & Mobile Networks (WiMo), 2010.

PRESENTATIONS

1. "Design & Analysis of Split- and Aggregated-TCP for Smart Metering Infrastructure", PhD Seminar, University of Waterloo, 6 May 2013
2. "Design of Split- and Aggregated TCP (SA-TCP) for Smart Metering Infrastructure", for visitors from Thomson Reuters, University of Waterloo, 28 Feb 2013
3. "Design and Analysis of Split- and Aggregated-Transport Control Protocol (SA-TCP) for Smart Metering Infrastructure", for the conference IEEE SMARTGRIDCOMM, Taiwan, 7 Nov 2012
4. "Design of Split- and aggregated-TCP (SA-TCP) for Smart Metering Infrastructure", for CISTEL Technologies, University of Waterloo, 8 June 2012
5. "Transport Layer Issues in Automatic Meter Reading Networks", for Cistech Inc , Ottawa, 6 March 2012
6. "Communication Protocols for Smart Metering Infrastructure", for CISTEL Technologies, Ottawa, 7 Dec 2011
7. "A Transport Control Protocol Suite for Smart Metering Infrastructure", Malysia, ICEDSA2011, 25 Apr 2011
8. "Design of Data Communication Infrastructure for Automatic Meter Reading in Smart Power Grids", for Optimization course, University of Waterloo, 28 Mar 2011
9. "Architecture and Transport Protocols for Smart Power Grid", comprehensive exam, University of Waterloo, 25 May 2010
10. "Transport Control Protocol for Smart Metering", for graduate students, University of Waterloo, 11 May 2010
11. "Wireless Communication for Smart Grid Applications", for Hydro One, University of Waterloo, 29 Mar 2010
12. "Automatic Meter Reading System Using WiMAX Technology", University of Waterloo, 23 July 2008
13. "Secure Data Aggregation Protocol with Byzantine Robustness for wireless Sensor Networks", 25 Sep 2007

PROFESSIONAL COURSES ATTENDED

- Teaching Methods, University of Waterloo, Jun 2013
- Teaching Large Classes, University of Waterloo, Jun 2013
- Creating Memorable Lectures, University of Waterloo, Jul 2013
- Preparing Students for Group Work, University of Waterloo, Jul 2013
- Teaching Assistantship, University of Waterloo, Sep 2006
- Windows2000 Professional and Server (Informatics group, UK) Aug,2002
- Windows2000 Network Infrastructure (Informatics group, UK) Aug 2002
- Windows2000 Directory Services (Informatics group, UK) Aug 2002
- Interconnecting Cisco Network Devices (ICND) (Fast lane, Dubai) Oct 2003
- Building Scalable Cisco Internet works (BSCI) (Fast lane, Dubai) Oct 2003
- Software Distribution: Vision64 (Metrix systems, Dubai) Sep,2003
- Building Cisco Multi-layer Switched Networks (BCMSN) (Fast lane, Dubai) Mar,2004
- Building Cisco Remote Access Networks (BCRAN) (Fast lane, Dubai) Mar,2004
- Backup software: Time Navigator Design and Administration (Atempo, France) Jan,2004

CERTIFICATES

- CCNA (Cisco Certified Network Associate)
- MCP Windows2000 Professional
- MCP Windows2000 Server
- MCP Windows Directory Services
- Atempo Certified Professional Diploma (backup SW)
- Vision64 certificate (distribution software)

REFERENCES

1. Sagar Naik, professor, Departement of Electrical and Computer Engineering, University of Waterloo
   Email: Snaik@uwaterloo.ca
   Phone: +1 519 888 4567 ext. 35313
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2. Atef Abdrabou, associate professor, Departement of Electrical Engineering, United Arab Emirates University, UAE
   Email: atef.abdrabou@uaeu.ac.ae
   Phone: +971 3 713 5149

3. Ramadan El-Shatshat, Lecturer, Department of Electrical and Computer Engineering, University of Waterloo, Ontario, Canada
   Email: raelshatshat@uwaterloo.ca
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   Fax : +1 519 746 3077